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BIOLOGICAL EVALUATION OF PROPOSED DOG VALLEY DWARF MISTLETOE CONTROL PROJECT CARSON CITY RANGER DISTRICT - TOIYABE NATIONAL FOREST

BY

E. LaGrande Hobbs, Plant Pathologist
Ann Keysor, Biological Technician

INTRODUCTION

Past fire and timber sale activity in the Dog Valley area, Carson Ranger District, have created a number of openings which have been planted with ponderosa pine. The planted trees are well-stocked, growing vigorously and 5-15 feet tall. However, ponderosa and Jeffrey pine infected with dwarf mistletoe (DM) occur as individual overstory trees in the plantations, and as bordering stands between the plantations. The potential exists for increased infection of the planted ponderosa pine causing growth reduction, reduced wood quality and possible mortality.

GENERAL INFORMATION

Causal Agent: Western dwarf mistletoe, Arceuthobium campylopodium.

Hosts: Ponderosa pine, Pinus ponderosa var. ponderosa and Jeffrey pine, P. Jeffreyi.

Type of Damage: Growth reduction is occurring in the infected overstory but is not yet occurring in the understory. The potential exists for increased infection of the understory leading to growth reduction, lowering of wood quality, and possible mortality.

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EXPERIMENT STATION

EVALUATIONS AND RECOMMENDATIONS

During the 1982 field season, Carol Aiello of the Carson City RD made a careful survey of 25 plantations to determine the location of infected overstory trees within the plantations and along the edges, and to determine the extent of spread to the understory in the plantations. In 1983, FPM personnel partially rechecked the 1982 observations and found them to be accurate. Based on these observations the following evaluations and recommendations have been proposed.

Some plantations will be discussed individually while others will be discussed as a group due to their close proximity and their similarity in infection pattern and size.

Plantations 1, 3, 4 - Plantation 1 consists of 61 acres south of the road to the Dog Valley Guard Station (Fig. 1). There are 2 or 3 infected overstory trees within the plantation and DM is spreading to the understory in their vicinity. Also, DM has apparently jumped the road along the north edge from trees north of the road and is spreading into the plantation.

Plantation 3 is 1.5 acres north of the road to Dog Valley Guard Station (Fig. 1). There is a band of larger infected trees between the plantation and the road which is spreading DM into this plantation and across the road to plantation 1.

Plantation 4 is 2.5 acres in size, just west of plantation 3, with DM spreading into the plantation from infected trees between the road and the plantation. These same infected trees are the source of spread into plantation 1. There is also a single, infected overstory tree within the planation.

Normally with plantations as small as 3 and 4, the recommendation would be to either enlarge the area to 20 or 30 acres or not do anything, since DM could spread into the plantation from the edges and effectively cover the whole area very quickly. In this case, however, DM is spreading into plantation 1 and plantations 3 and 4 from the same band of infected trees along the road. Removal of this band of infected trees and the understory that has been infected would effectively stop spread into plantation 1 and slow the spread into 3 and 4. It is recommended that this be done. Also, the few overstory trees within plantations 1 and 4 should be removed.

Plantation 2 - This is a relatively long, narrow plantation of 77.5 acres. DM is spreading into the plantation from infected trees along the west and northeast borders. Along the west border there is a fairly wide peninsula of heavily infected trees extending into the plantation (Fig. 1). It is recommended that the infected overstory and understory trees along the edges be removed, going far enough out into the adjacent stand to straighten the edge along the west side.

Plantation 5 - This plantation is 5.5 acres west of plantation 4 with DM coming in from the northern end from bordering infected trees. Otherwise the plantation is bounded by openings 25-50 feet across. Since the infection is coming only from a small corner on the northern end and the plantation is small, no control action is recommended for this plantation, unless the edge is pushed back far enough to get all infected trees in that area.

Plantation 6, 9, & 10 - Plantation 6 is 20 acres in size and located north of the railroad grade where it comes to the Dog Valley Road. Almost the whole plantation is heavily infested apparently from infected trees along the edges. Plantation 9 is just north of 6 with DM infected trees on its southern edge. Its size is 1 acre. Plantation 10 is 1 acre just a little west of 6. These two plantations are separated by heavily infected larger trees. Essentially the whole plantation is heavily infected. These plantations should all be joined by removing all of the ponderosa and Jeffrey pines separating them thus enlarging the opening. All plantation trees in 10 and most of them in 6 should be cut. In other words, stand destruction is recommended in plantations 6 and 10, then the area should be replanted with healthy trees.

Plantation 12 - This plantation is 63 acres in size on both sides of the Loop Road west of the Dog Valley Campground. There is one large group of infected trees within the stand east of the road which is spreading DM into the young plantation trees and a group of 3 infected overstory trees just south of the larger group moving into the stand along the southwest border. Especially critical is an infected stand of trees forming a broad "tongue" into the plantation north of the road. The infected stands within the plantation south of the road should definitely be removed. The "tongue" should be cleared in order to straighten the edge north of the road. Otherwise the borders do not represent a major threat to an area this size.

Plantation 13 - This plantation has an area of 12 acres and is located at the fork where the Dog Valley Campground road branches off the Loop Road. It is mostly free of DM except in a narrow strip east of the main road past Dog Valley Campground. The infection is coming from trees within the Summit II timber sale.

If all of the infected trees along the eastern edge of the plantation are removed through the timber sale, the infected understory along the edge east of the plantation should be cut. However, if the overstory is not removed, no action needs to be taken. The road will help slow spread into the rest of the plantation therefore control work is not justified.

Plantation 14 - This plantation is 30 acres in size and located west of the Dog Valley Road and north of the Loop Road. The site is quite dry and rocky with only scattered trees, all of which appear to be infected. No infected trees should be cut in this area since all trees would need to be cut and it may be difficult to get this site regenerated. It may be possible to plant incense-cedar and/or white fir which are not hosts for the species of DM present. This would reduce the spread and impact of the DM.

Plantation 15 - This is a plantation of 11.5 acres, northwest of plantation 14, surrounded by DM infected overstory trees with the DM spreading into the plantation. The overstory trees are within the North Branch wood cutting area. However, some of the infected trees along the edges are marked as leave trees. Due to the relatively small size of this plantation it will be difficult to prevent 100% infection of the planted trees during the period of a rotation if any infected trees border the plantation. It is recommended that all overstory trees be removed from around the edge to enlarge the opening to 20-30 acres. As a further barrier to slow the spread of DM into the plantation, nonhost white fir and incense-cedar could be planted in a 30- to 50-foot border all around the edge. Infected trees should be removed via a sanitation thinning operation.

Plantation 16 - This is a large plantation of 205 acres located on both sides of the Dog Valley Road north of the road to Dog Valley Campground. There are infected overstory trees along the north and south edges but considering the large size of this plantation, the threat from the edges is minor. Of more concern are two islands of infected overstory trees within the plantation east of the road. One island is on a high rocky knob and the other is south of the knob. All overstory and all infected understory should be cut in these two areas. It may be difficult to regenerate the opening created on the knob, but it is important to eliminate this source for infection of the surrounding stand. The other area south of the knob should not be difficult to regenerate.

Plantation 17 - This is a large area of 300 acres located on the Loop Road west of plantation 12. The plantation is on a relatively steep hillside. The arm below the road on the east end of the plantation is the only area of concern in regard to DM. This arm is surrounded by infected overstory trees which are in the Summit II timber sale. The timber sale should remove all of these infected trees. If not, they should be cut after the sale utilizing a firewood sale. In addition to the edges there are scattered overstory trees within the plantation. They should also be cut and the regeneration sanitized.

Plantation 20 and 25 - Plantation 20 (Fig. 2) is 125 acres and 25 is 28.5 acres. Both have lightly infected overstory trees along a portion of the edge of these plantations. No control action is recommended for these plantations. The size and shape of plantation 20 is good to prevent spread of DM from the edges to most of the area and the size of 25 is adequate for this purpose.

Plantations 7, 8, 18, 19, 21, 22, 23, and 24 - These plantations are all free from infection and there is not enough infection on the edges to cause any concern. Plantation 23 does have some heavily infected trees a short distance from the plantation. However, these do not pose an immediate threat to the plantation.

GENERAL RECOMMENDATIONS

In general the removal of infected overstory trees within the plantations should have highest priority. Infected trees within the plantations occur in plantations 1, 2, 12, 16 and 17. Removal of overstory trees in these plantations should also be accompanied by sanitation of the understory surrounding the overstory. Second priority should go to removal of peninsulas and tonques of infected overstory as found in plantations 2 and 12. Third priority would be to cut infected overstory trees along the edges of plantations 3 and 4, followed by 2, 13, 15 and 17. The cutting of infected trees along the edge of the plantations will be very effective in preventing spread of DM into the stand if a 30- to 50-foot strip around the edge is planted to nonhost trees such as incense-cedar or white fir. This is highly recommended.

FUNDING

Forest Pest Management funds may be used to cut infected overstory and understory. We can also fund that part of the cost of laying out timber sales or wood cutting areas in DM infected areas which is above the normal cost of laying out such sales.

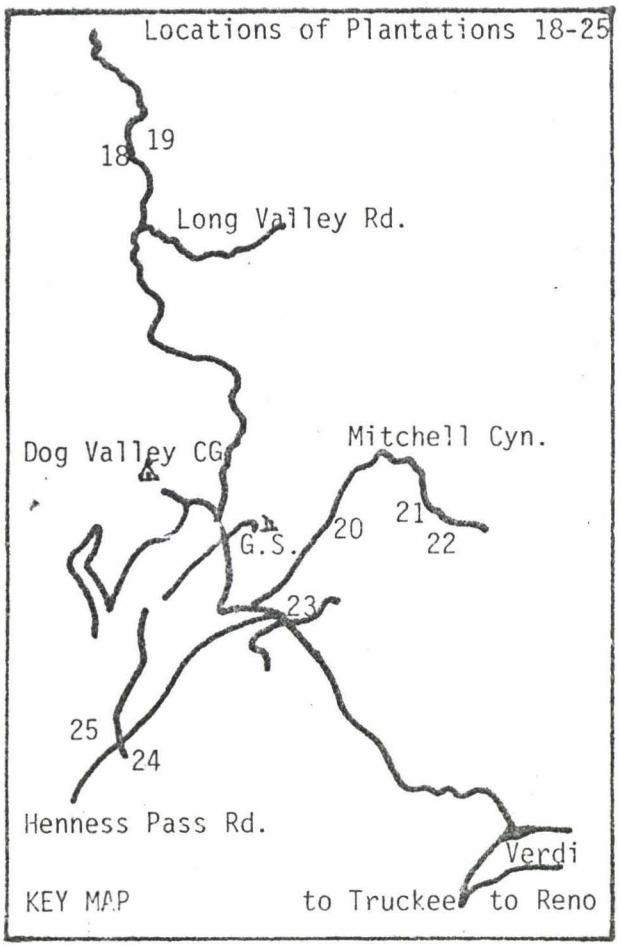

Figure 1. A compilation of the mistletoe survey of plantations #1 to 17 in the Dog Valley, California area, completed August, 1982 by the Carson Ranger District, Toiyabe National Forest.

to Long Valley Rd.

16

15

14

Dog Valley Campground

Dog Valley Guard Station

5

4

13

10

9

3

1

11

12

8

7

6

2

Railroad Grade

17

Dog Valley Rd.

to Mitchell cyn.

to Verdi & Reno

Loop Road

Light Infection

Medium Infection

Heavy Infection

Rock Quary

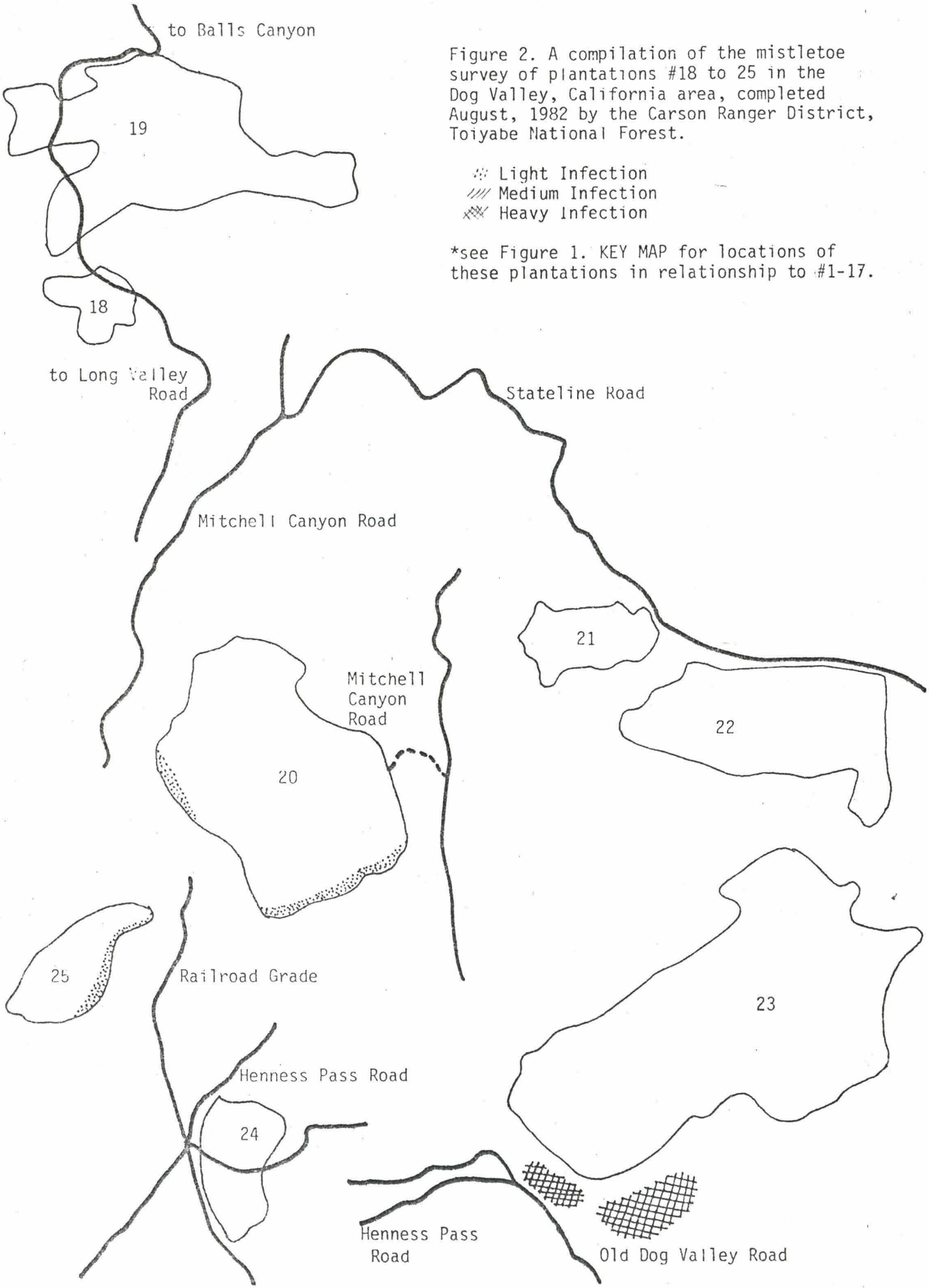

Figure 2. A compilation of the mistletoe survey of plantations #18 to 25 in the Dog Valley, California area, completed August, 1982 by the Carson Ranger District, Toiyabe National Forest.

Light Infection
Medium Infection
Heavy Infection

*see Figure 1. KEY MAP for locations of these plantations in relationship to #1-17.